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93-282158/36 E23 G02 ZENE 92.03.06  
ZENECALTD \*EP 559310-A1  
92.05.26 92GB-011109 (+92GB-004898) (93.09.08) C09D 11/02,  
C09B 62/00  
Ink compsn. esp. for ink jet printing - contg. bis-triazinyl azo dye  
and opt. xanthene dye, giving bright, fast magenta prints (Eng)  
C93-125900 R(AT BE CH DE ES FR GB IT LI NL)  
Addnl. Data: GREGORY P, KENYON R W  
93.01.04 93EP-300017

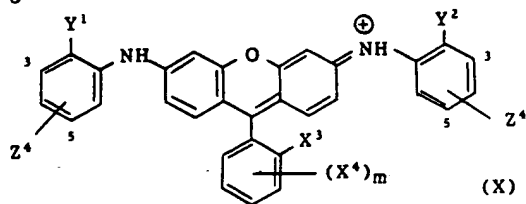
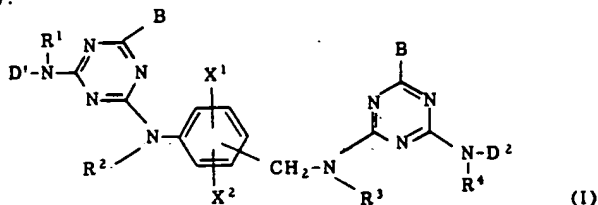
E(21-D1, 21-D9) G(2-A4B)

D<sup>1</sup>, D<sup>2</sup> = azo series chromophores;  
R<sup>1</sup>-R<sup>4</sup> = H or opt. substd. alkyl;  
B = labile atom or gp., OH, NH<sub>2</sub> or an ether, thioether or  
amine gp.; and  
X<sup>1</sup>, X<sup>2</sup> = H, halo, alkyl, alkoxy, acylamino, ureido, NO<sub>2</sub>,  
COOH or SO<sub>3</sub>H.

Dyes (I) where B = amino, ether, thioether or amine  
gp. are new cpds.

Also claimed are compsns. contg. (I) and a xanthene  
dye of formula (X); and inks comprising these (I)/(X)  
compns. in a liq. medium contg. water and a water-soluble  
org. solvent in wt. ratio 95:1 - 50:50.

An ink contg. less than 5% inorg. cpds. comprises a liq.  
medium and an N,N'-bis-(N-(azo chromophore gp-substd.)-  
amino-1,3,5-triazinyl)-aminobenzylamine deriv. of formula  
(I):



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$X^3$  =  $\text{SO}_3\text{H}$  or  $\text{COOH}$ ;  
 $X^4$  = substit;  
 $m$  = 0-2;  
 $Y^1, Y^2$  = alkyl or halo; and  
 $Z^4$  =  $\text{COOH}$ , pref. in the 3- or 5-position.

#### USE/ADVANTAGE

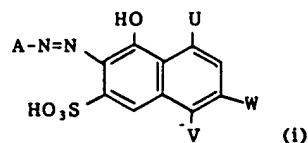
An ink jet printing process using the ink contg. (I) is claimed, as is an overhead projector slide printed with the ink. (I) are bluish-red (magenta) dyes which give prints on paper with extremely bright shades, acceptable water-fastness and good light fastness.

#### PREFERRED COMPOSITION

The liq. medium comprises water and a water-soluble org. solvent in wt. ratio 95:1 - 50:50. (I) is in opt. substd. ammonium salt form. (I) is completely dissolved in the medium to form a soln.

#### CHROMOPHORE

Prefd. gps.  $D^1$ ,  $D^2$  are of formula (i) (not specified in the claims):



$U$  = bond to  $\text{NR}'$ , one of  $V$ ,  $W$  =  $\text{SO}_3\text{H}$  and the other =  $\text{H}$ ; or  $U$  =  $\text{H}$ ,  $W$  = bond to  $\text{NR}'$  and  $V$  =  $\text{SO}_3\text{H}$ ; and  $A$  = radical of the benzene or naphthalene series, esp. 1-sulpho-2-naphthyl, 1,5-disulpho-2-naphthyl or 2-sulphophenyl (opt. monosubstd. by 1-4C alkyl, 1-4C alkoxy or a further  $\text{SO}_3\text{H}$ ).

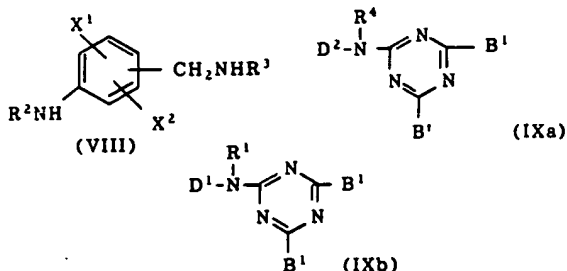
#### PREPARATION (not claimed)

Cpds. (I;  $B = B^1$ ) are prepd. by condensing 1 mol. of a benzylamine of formula (VIII) with a triazine of formula (IXa) then with a triazine of formula (IXb). If  $D^2\text{-NR}^4\text{-}$  =  $D^1\text{-NR}'\text{-}$ , (VIII) is condensed with ca. 2 mols. of (IXa):

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B¹ = labile gp. or atom.

Cpds. (I; B = OH, NH₂ or ether, thioether or amine gp.) are prepd. by condensing (I; B = B¹) with water, NH₄OH, an ethoxide, a thioethoxide or an amine, opt. in presence of alkali.

**EXAMPLE**

A soln. of 3-aminobenzylamine (0.59 g) in acetone (10 ml) was added to a stirred soln. of 1-hydroxy-2-(1,5-di-

sulphonaphth-2-yl-azo)-8-(4,6-dichloro-s-triazin-2-ylamino)-naphthalene-3,6-disulphonic acid (21.89 g) in water (200 ml). The mixt was stirred at 20°C and pH 6-7 for 2 hrs. then at 30-35°C and pH 8-8.5 for 3 hrs., filtered and treated with EtOH to ppt. 14.6 g of the corresp. 3-(4-(subst. naphthylamino)-6-chloro-1,3,5-triazin-2-ylamino)-N-(subst. triazinyl)-benzyl amine deriv. (I') as a bluish-red dye.

A suspension of (I') (58.88 g) in water (400 ml) was dialysed to remove inorganic cpds. then evapd. to give (I') as its Na salt. When made into an ink (e.g. contg. 2.5 pts. (I'), 60 pts. water and 40 pts. ethylene glycol) and printed onto plain paper using a thermal ink-jet printing machine, the image had moderate water fastness (ca. 60%) and an attractive bright shade.

(I') had Emac 70000 at 543 nm and brightness 69 on a Minolta Chroma Meter.

In another example, (I') was reacted with pentaethylene hexamine in water to give the corresp. (new) cpd. with the Cl gps. replaced by H₂NCH₂CH₂(NHCH₂CH₂)₄NH. (18pp2400MBDwgNo0/0).

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